

ABSTRACT

The present invention offers a method of introducing an impurity and an apparatus for introducing the impurity, with which an impurity layer can be formed easily in a shallower profile.

Component devices manufactured taking advantage of these method or apparatus are also disclosed.

- 5 When introducing a material to a solid substance which has an oxidized film or other film sticking at the surface, the present method and apparatus first removes the oxidized film and other film using at least one means selected from among the group consisting of a means for irradiating the surface of solid substance with plasma, a means for irradiating the surface of solid substance with gas and a means for dipping the surface of solid substance in a reductive liquid; and then, attaches or introduces a certain
- 10 desired particle. The way of attaching, or introducing, a particle is bringing a particle-containing gas to make contact to the surface, which surface has been made to be free of the oxidized film and other film. Thus, the particle is attached or introduced to the surface, or the vicinity, of solid substance. The component devices are those manufactured taking advantage of the above method or apparatus.

(12)特許協力条約に基づいて公開された国際出願

(19)世界知的所有権機関
国際事務局(43)国際公開日
2004年4月1日 (01.04.2004)

PCT

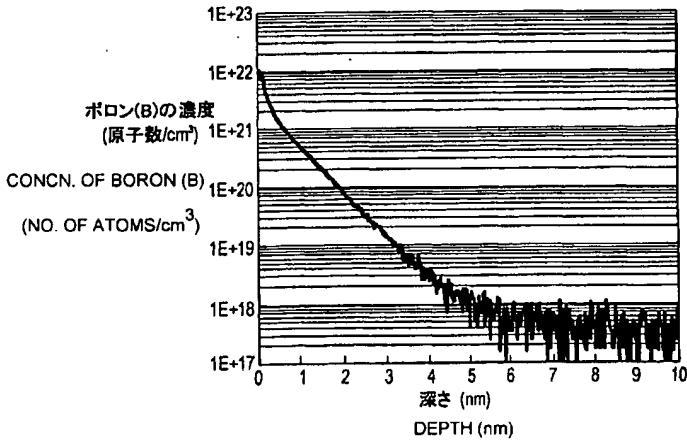
(10)国際公開番号
WO 2004/027847 A1

- (51) 国際特許分類7: H01L 21/22, 21/265
 (21) 国際出願番号: PCT/JP2003/012001
 (22) 国際出願日: 2003年9月19日 (19.09.2003)
 (25) 国際出願の言語: 日本語
 (26) 国際公開の言語: 日本語
 (30) 優先権データ:
 特願2002-274554 2002年9月20日 (20.09.2002) JP
 (71) 出願人(米国を除く全ての指定国について): 松下電器産業株式会社 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.) [JP/JP]; 〒571-8501 大阪府門真市大字門真1006番地 Osaka (JP).
- (72) 発明者; および
 (75) 発明者/出願人(米国についてのみ): 佐々木 雄一朗 (SASAKI,Yuichiro) [JP/JP]; 〒194-0004 東京都町田市鶴間1720-1-304 Tokyo (JP). 水野文二 (MIZUNO,Bunji) [JP/JP]; 〒630-0121 奈良県生駒市北大和2-31-15 Nara (JP). 中山一郎 (NAKAYAMA,Ichiro) [JP/JP]; 〒571-0030 大阪府門真市末広町13-17 Osaka (JP).
 (74) 代理人: 岩橋文雄, 外 (IWAHASHI,Fumio et al.); 〒571-8501 大阪府門真市大字門真1006番地松下電器産業株式会社内 Osaka (JP).
 (81) 指定国(国内): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR,

/続葉有/

(54) Title: METHOD OF INTRODUCING IMPURITY, DEVICE AND ELEMENT

(54) 発明の名称: 不純物導入方法、装置および素子



(57) Abstract: A method of introducing an impurity wherein a shallow impurity layer can be formed easily; an impurity introduction device; and an element produced thereby. In these impurity introducing method and impurity introduction device, when it is intended to introduce a substance in a solid base having a film of, for example, an oxide attached to a surface thereof, the film of, for example, an oxide is removed by at least one means selected from the group consisting of means for irradiating the solid base surface with plasma, means for exposing the solid base surface to a gas and means for immersing the solid base surface in a reducing liquid before effecting attachment or introduction of desired particles. The method of attaching or introducing desired particles comprises bringing the solid base surface having the film of, for example, an oxide detached therefrom into contact with a gas containing desired particles so as to effect attachment to or introduction in the solid base surface or vicinity thereof. Elements are produced by the above impurity introducing method or impurity introduction device.

(57) 要約: 浅い不純物層をより簡単に形成できる不純物導入方法、不純物導入装置およびそれによって製造される素子が提供される。この不純物導入方法および不純物導入装置は、表面に酸化物などの膜が付着している固体基体に物質を導入する際に、プラズマを固体基体表面に照射する手

WO 2004/027847 A1

/続葉有/